

## WHAT IS CLAIMED IS:

1. An optical interface device comprising:

5 a stimulus input port for receiving a light signal;

a test signal output port;

10 a plurality of device test ports, each device test port coupling a light signal from said interface to a port of a device under test and coupling a light signal from said port of said device under test to said interface;

15 a reference signal generator for generating a reference signal and a stimulus signal from said light signal;

20 a first optical switch for routing said stimulus signal to one of said device test ports, said first optical switch having one output port corresponding to each of said device test ports that is capable of coupling said stimulus signal to a device under test;

a second optical switch having a plurality of input ports, each input port being connected to a corresponding one of said device test ports, and a switch output port coupled to said test signal output port; and

25 a plurality of optical routers, one corresponding to each of said device test ports, each optical router connecting an output of said first optical switch to a corresponding one of said device test ports and connecting that device test port to a corresponding one of said second optical switch input ports.

30 2. The interface of Claim 1 wherein one of said optical routers comprises an optical coupler.

3. The interface of Claim 2 wherein an output of one of said optical routers provides a signal that is related in intensity to the intensity of said light signal leaving said device test port corresponding to that one of said optical routers.

5 4. The interface of Claim 1 wherein one of said optical routers comprises an optical circulator.

5. The interface of Claim 1 further comprising an optical delay circuit for generating an optical delay between said reference signal and said stimulus signal;

10 6. The interface of Claim 1 further comprising an optical combiner for combining said reference signal with a signal leaving said switch output port of said second optical switch prior to that signal being coupled to said test signal output port.

15 7. The interface of Claim 1 further comprising a reference signal output port, said reference signal being coupled to said reference signal output port.

20 8. The interface of Claim 1 further comprising a polarization synthesizer for setting the polarization state of said stimulus signal.

9. The interface of Claim 1 further comprising a polarization diversity receiver coupled to said test signal output port.